

Brown Pelican Roost Site Atlas: A Database and Management Tool for the California Coast

The endangered California brown pelican has been studied extensively; however no comprehensive statewide database or mapping project has adequately documented pertinent information necessary for oil spill response and Natural Resource Damage Assessment (NRDA) personnel. This presentation discusses an electronic atlas created to aid in wildlife recovery, NRDA, and restoration following marine oil spills.

California Brown Pelican Roost Site Atlas Project



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Background

- California Brown Pelicans roost communally at traditional sites along the California coast
- Pelican surveys have been conducted but no comprehensive database or set of roost site maps have been developed



Needs for Site-Specific Pelican Data

- Monitoring consistency
- Oil Spill Contingency Planning
- Oil Spill Search and Collection
- Natural Resource Damage Assessment
- Restoration Planning
- Management and Conservation



Primary Project Objectives



- Collate historical roosting pelican distribution and abundance data from multiple sources into master database
- Identify, georeference, and map roost sites in northern and central California
- Present results in electronic, hardcopy atlas and GIS ready database

Roost Site Description

- Seasonal pelican abundance
- Diurnal pattern of use (night roost status)
- Site ownership and management
- Known management issues
- Ground-based viewpoints



Today's Talk

- Describe database
- Walk through roost atlas
- Discuss how atlas can be used for
 - 1. monitoring
 - 2. contingency planning
 - 3. nrda
 - 4. restoration planning
 - 5. management and conservation



Sources of Data (1986-2007)

- Graduate Research (UCD)
- Moss Landing Wildlife Area Study (CDFG)
- Oil Spill Response Surveys/NRDA
 - *Torch/Irene, Kure* (ECI)
- Restoration Planning Efforts (*American Trader* Trustees)
- Annual Aerial Seabird Colony Surveys (CDFG, *Apex Houston* Trustees, HSU)
- Coastal Bird and Mammal Study (CDPR)
- Mugu Lagoon Disturbance Study (USN)
- Southern California Bight Seabird Distribution Study (MMS)
- Opportunistic surveys (Jaques)

Challenges of Data Mining

- No established or long-term monitoring effort
- No established database structure
- No consistent definition or grouping of roost sites
- Different observers with different methods
- Data is in a variety of formats
- Data hard to retrieve due to relocation, change in computers, change in work associations
- But overall, very rewarding!



The Database

- 196 roost sites defined
- 1,833 records collated
- 50% Aerial Survey, 50% ground or boat- based
- 43% first decade (1986-1996); 57% second decade (1997-2007)
- Warning! Uneven sampling limits statistical use

| <u>Fieldname:</u> | <u>Field Meaning</u> |
|--------------------|--|
| STATE: | State where roost site occurs |
| CO: | County, 2 letter code |
| CONO: | County number, numbered from south to north along the California coast |
| NEWNO: | New roost site number, revised from earlier databases, resets at south end of each county. |
| LOC: | Location. Roost site name. |
| HAB: | Habitat. Primary habitat category, one that best describes roost site. |
| DATE: | Date of observation. |
| TIME: | Time of observation. |
| METHOD: | Method of observation |
| TOTRST: | Total number of pelicans at roost site |
| LATITUDE: | Latitude in decimal degrees |
| LONGITUDE: | Longitude in decimal degrees |
| OWNER: | Owner of roost site |
| MANAGER: | Manager of location where roost site exists |
| FWSCOLN: | USFWS Seabird Colony Catalog number from Carter et al. 1992. |
| COLONYNAME: | USFWS Seabird Colony Catalog name from Carter et al. 1992. |
| OBSERVERS: | Observers involved in collecting field data |
| DOTTERS: | Person(s) that dotted and counted pelicans from aerial photographs |
| YEAR: | Year in which data were collected |
| MO: | Month in which data were collected |
| DAY: | Day that data were collected |

SHELL BEACH ROCKS

Roost No: SL 6.0 35.1512, -120.673 Map No. 20
 USFWS Colony No: 477-035 Owner: BLM Manager: BLM

Habitat: Offshore Rock Night Roost: Confirmed



High Counts of Brown Pelicans at Shell Beach Rocks

| Time Period | Spring | | Summer | | Fall | | Winter | |
|-------------------|------------------|---|--------------------|----|------------------------------|----|-----------------|---|
| | Total | N | Total | N | Total | N | Total | N |
| 1986-1996 | ND | 0 | 1,674 (7/25/87) | 12 | 1,098 (11/1/91) | 22 | ND | 0 |
| 1997-2007 | 119 (5/24/01) | 2 | 1,655 (8/26/99) | 6 | 2,330 (9/7/00) | 6 | 33 (1/17/01) | 3 |
| High Count: 2,330 | | | | | Total Counts in Database: 51 | | | |

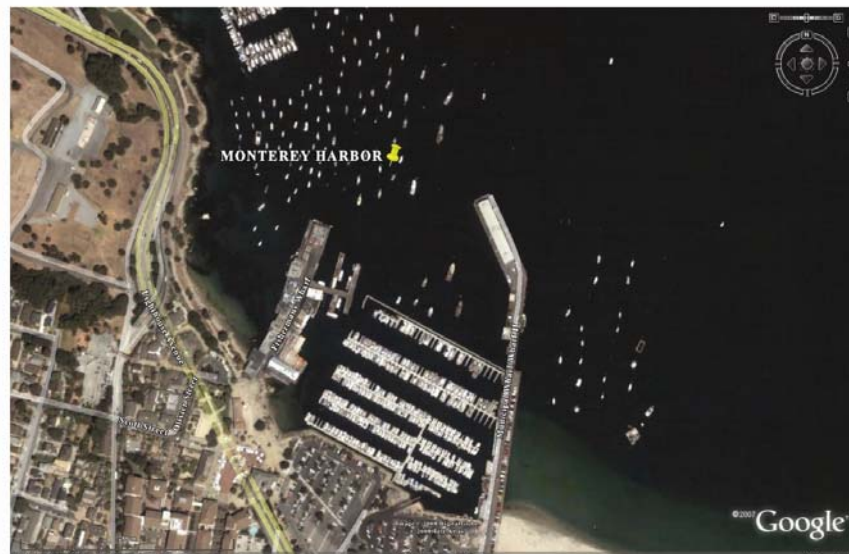
Access and Site Viewing: View from various public access points along Ocean Blvd. in Shell Beach.

Management Concerns: Human disturbances from both water and shore-based activities, including landings on rocks. Effects of commercial kayak tours and new shoreline park development are unknown.

MONTEREY HARBOR

Roost No: MO 21.0 36.6062, -121.891 Map No. 71
 USFWS Colony No: 454-053 Owner: PRIV Manager: CITY

Habitat: Man-made Structures Night Roost: Confirmed



High Counts of Brown Pelicans at Monterey Harbor

| Time Period | Spring | | Summer | | Fall | | Winter | |
|-----------------|--------|---|------------------|------------------------------|-------------------|----|--------|---|
| | Total | N | Total | N | Total | N | Total | N |
| 1986-1996 | ND | 0 | 212 (6/17/91) | 1 | 634 (11/19/87) | 10 | 530 | 2 |
| 1997-2007 | ND | 0 | 42 (7/6/00) | 2 | 261 (9/2/98) | 4 | ND | 0 |
| High Count: 634 | | | | Total Counts in Database: 19 | | | | |

Access and Site Viewing: View from various vantage points on the Monterey Fisherman's Wharf and Commercial Wharf.

Management Concerns: Harm to pelicans from contaminants, fishing-related conflicts, disease, accidents, and human malice. Nuisance issues due to negative effects of pelican use on public and private property.

SMITH RIVER MOUTH

Roost No: DN 18.0 41.9433, -124.204 Map No. 192
 USFWS Colony No: None Owner: PRIV Manager: PRIV

Habitat: River Mouth Night Roost: Not Suitable



High Counts of Brown Pelicans at Smith River Mouth

| Time Period | Spring | | Summer | | Fall | | Winter | |
|-----------------|--------|---|-----------|----|------------------------------|----|--------|---|
| | Total | N | Total | N | Total | N | Total | N |
| 1986-1996 | ND | 0 | 462 | 4 | 29 | 8 | ND | 0 |
| | | | (7/6/87) | | (9/10/86) | | | |
| 1997-2007 | ND | 0 | 44 | 15 | 590 | 13 | ND | 0 |
| | | | (8/27/99) | | (10/14/07) | | | |
| High Count: 590 | | | | | Total Counts in Database: 40 | | | |

Access and Site Viewing: View from parking lot at end of Mouth of Smith River Road and/or from parking lot at Ship-a Shore Motel.

Management Concerns: Human disturbance from motorized vehicles. Disturbance cannot be managed due to private ownership.

POINT CONCEPTION

Roost No: SB 20.0 34.4497, -120.471 Map No. 1
 USFWS Colony No: 501-013 Owner: USCG Manager: USCG

Habitat: Offshore Rock and Mainland Shore Night Roost: Unknown



High Counts of Brown Pelicans at Point Conception

| Time Period | Spring | | Summer | | Fall | | Winter | |
|-----------------|-----------|---|------------|---|------------------------------|---|------------|---|
| | Total | N | Total | N | Total | N | Total | N |
| 1986-1996 | ND | 0 | 104 | 3 | 431 | 2 | ND | 0 |
| | | | (6/11/92) | | (9/28/93) | | | |
| 1997-2007 | 12 | 1 | 113 | 1 | 150 | 3 | 712 | 4 |
| | (5/24/01) | | (7/17/01) | | (10/2/97) | | 1/15/01 | |
| High Count: 712 | | | | | Total Counts in Database: 14 | | | |

Access and Site Viewing: All data are from aerial surveys. No tested shoreline observation points. Site is a USCG Light Station. Permission to access required.

Management Concerns: Restricted public access has a positive effect, any changes to this condition may degrade roost habitat. Effects of USCG Operations unknown.

CASTLE ROCK NATIONAL WILDLIFE REFUGE

Roost No: DN 15.0 41.762, -124.249 Map No. 188
 USFWS Colony No: 325-006 Owner: USFWS Manager: USFWS

Habitat: Offshore Rock Night Roost: Confirmed



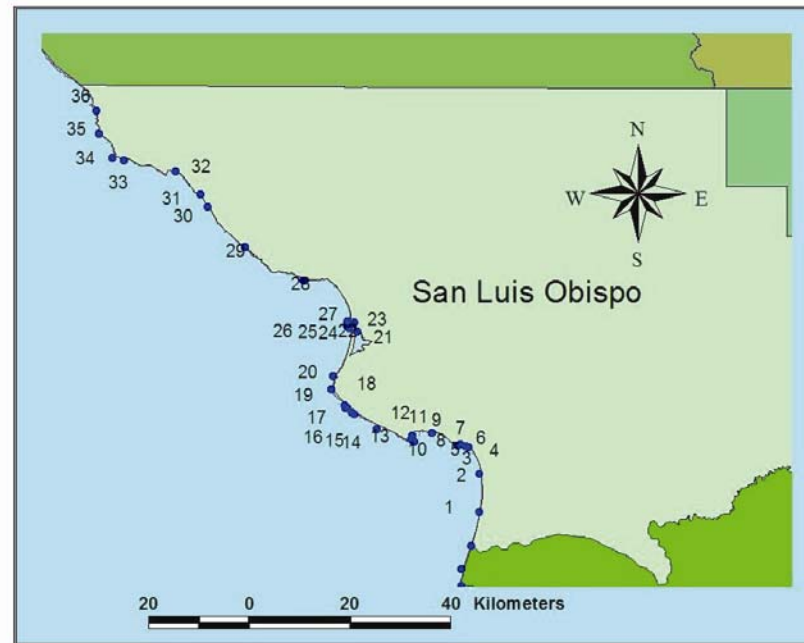
High Counts of Brown Pelicans at Castle Rock NWR

| Time Period | Spring | | Summer | | Fall | | Winter | |
|-------------------|-----------------|----|------------------|------------------------------|---------------------|----|--------|---|
| | Total | N | Total | N | Total | N | Total | N |
| 1986-1996 | ND | 0 | ND | 0 | ND | 0 | ND | 0 |
| 1997-2007 | 58 (5/16/98) | 13 | 467 (8/19/07) | 13 | 3,155 (11/13/03) | 21 | ND | 0 |
| High Count: 3,155 | | | | Total Counts in Database: 47 | | | | |

Access and Site Viewing: Castle Rock is closed to public access. View from Point St. George, various pull-outs on North Pebble Beach Drive, or by boat.

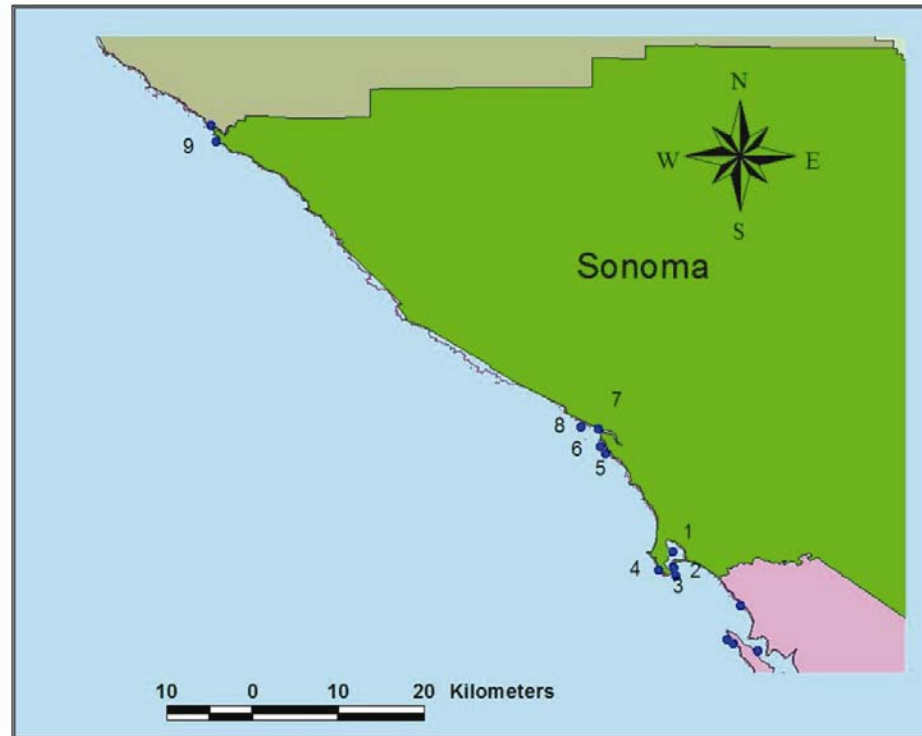
Management Concerns: Limited government research activities, and associated U.S. Coast Guard helicopter landings on the island, are the only known human disturbances affecting pelicans. Illegal trespass and boat-based disturbances may occur at times.

SAN LUIS OBISPO COUNTY



| San Luis Obispo County Roost Summary | |
|---|--|
| County number: | 6 |
| Number of roost sites: | 36 |
| Number of confirmed night roosts | 4 |
| Roost sites with known management issues: | 14 |
| Roost sites with >1,000 pelicans | 5: Oso Flaco Creek Mouth, Pismo Rock, Shell Beach Rocks, Shell Beach Rocks Margo Dodd, Morro Bay North Jetty |
| Roost sites with >500 pelicans | 10: Pismo Rock Area, Fossil Point Area, Pecho Rock, Lion Rock Diablo Canyon, Pup Rock, Morro Bay South Spit, Morro Bay South Jetty, Morro Rock, San Simeon Bay Rocks, Piedras Blancas Rock |

SONOMA COUNTY



| Sonoma County Roost Summary | |
|---|------|
| County number: | 12 |
| Number of roost sites: | 9 |
| Number of confirmed night roosts | 0 |
| Roost sites with known management issues: | 2 |
| Roost sites with >1,000 pelicans | None |
| Roost sites with >500 pelicans | None |

SAN FRANCISCO COUNTY

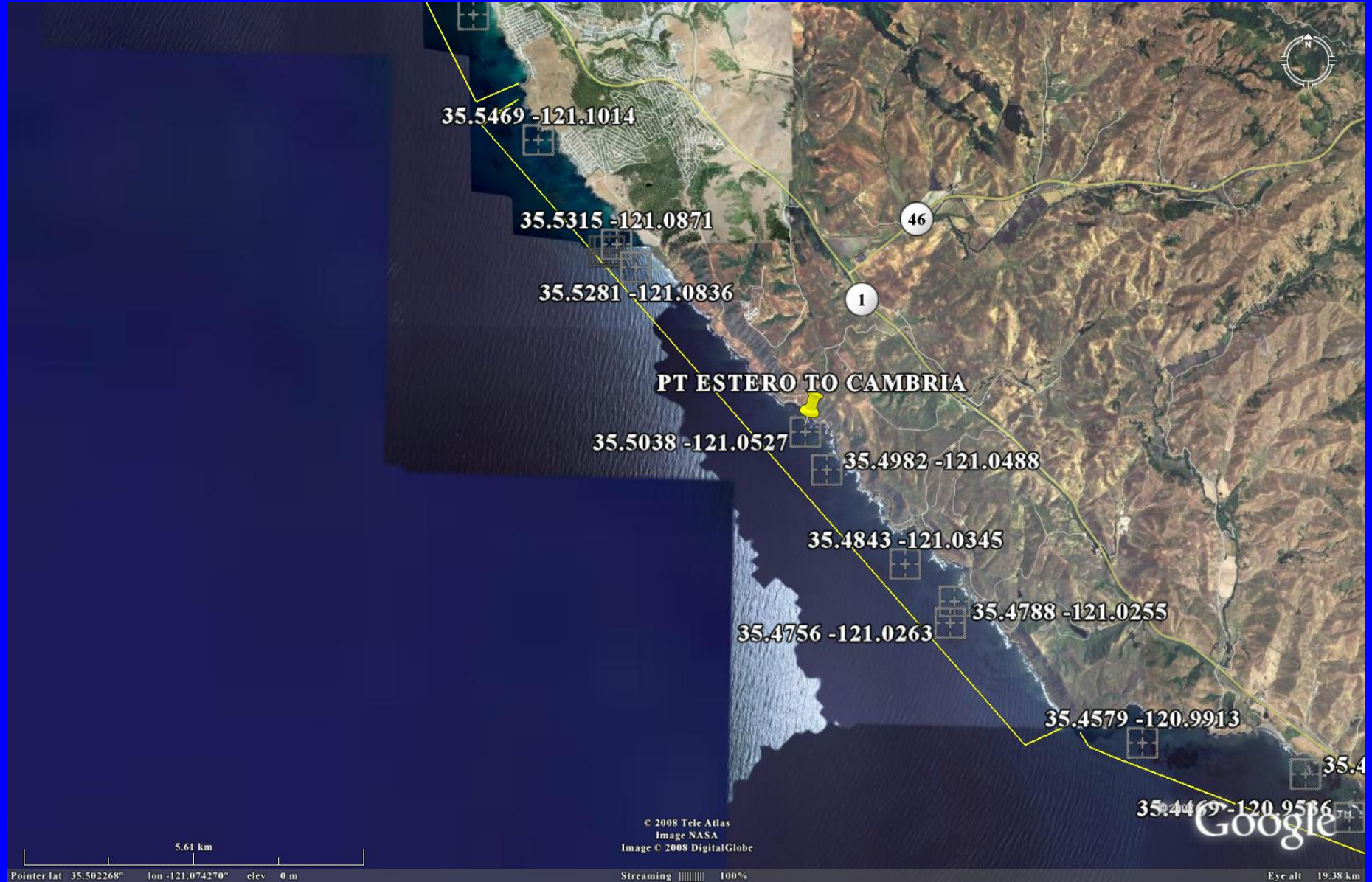


| San Francisco County Roost Summary | |
|---|---|
| County number: | 10 |
| Number of roost sites: | 2 |
| Number of confirmed night roosts | 2 |
| Roost sites with known management issues: | 1 |
| Roost sites with >1,000 pelicans | 2: <i>Seal Rocks San Francisco, Southeast Farallon Island</i> |
| Roost sites with >500 pelicans | No others |

Atlas Values

- Research and Monitoring
 - Maps and numbering system will facilitate future site specific monitoring
 - Have GPS and hardcopy on hand
 - Use photo counts for aerials; record zeros for means !
 - Baseline data is preserved and may be used for subsequent indication of trends in site use (with caution)





POINT ESTERO TO CAMBRIA

Roost No: SL 29.0 35.5046, -121.053 Map No. 43
 USFWS Colony No: None Owner: BLM Manager: BLM

Habitat: Offshore Rock Night Roost: Unlikely



High Counts of Brown Pelicans at Point Estero to Cambria

| Time Period | Spring | | Summer | | Fall | | Winter | |
|----------------|--------|---|----------------|-----------------------------|-----------------|---|-----------------|---|
| | Total | N | Total | N | Total | N | Total | N |
| 1986-1996 | ND | 0 | ND | 0 | ND | 0 | ND | 0 |
| 1997-2007 | ND | 0 | 6 (8/26/99) | 3 | 30 (9/12/00) | 3 | 48 (1/16/02) | 2 |
| High Count: 48 | | | | Total Counts in Database: 8 | | | | |

Access and Site Viewing: Most data are from aerial surveys. There are no discrete traditional communal roost sites in this area, so viewpoints will vary.

Management Concerns: None.

Atlas Values to OSPR

- Area Contingency Plans
 - Provides new and improved information for pelicans (sensitive site pages)



Oil Spill Response

- May affect oil containment strategies, hazing efforts, selection of staging areas, etc.



MANILLA OYSTER RACKS

Roost No: HU 9.0

USFWS Colony No: None

40.8234, -124.169

Owner: PRIV

Map No. 154

Manager: PRIV

Habitat: Artificial Structure

Night Roost: Unknown



High Counts of Brown Pelicans at Manilla Oyster Racks

| Time Period | Spring | | Summer | | Fall | | Winter | |
|-----------------|--------|---|------------------|-----------------------------|------------------|---|--------|---|
| | Total | N | Total | N | Total | N | Total | N |
| 1986-1996 | ND | 0 | ND | 0 | ND | 0 | ND | 0 |
| 1997-2007 | ND | 0 | 116 (8/27/99) | 1 | 135 (9/11/98) | 8 | ND | 0 |
| High Count: 116 | | | | Total Counts in Database: 9 | | | | |

Access and Site Viewing: View from Vance Avenue at western base of Samoa Bridge.

Management Concerns: Privately owned artificial structures, subject to disturbance from commercial activities.

Search and Collection



- Can help locate pelicans dead and alive
 - Increased efficiency of pelican recovery efforts
 - Possibly lead to more pelicans going to rehab
 - If alive, are there choices to be made re: capture?

PILLAR POINT HARBOR

Roost No: SM 9.0 37.4998, -122.482 Map No. 98
 USFWS Colony No: None Owner: SMHD Manager: SMHD

Habitat: Breakwater Night Roost: Confirmed



High Counts of Brown Pelicans at Pillar Point Harbor

| Time Period | Spring | | Summer | | Fall | | Winter | |
|-----------------|--------|---|-----------|---|------------------------------|---|--------|---|
| | Total | N | Total | N | Total | N | Total | N |
| 1986-1996 | ND | 0 | 268 | 3 | 55 | 5 | ND | 0 |
| | | | (7/6/86) | | (9/12/88) | | | |
| 1997-2007 | ND | 0 | 787 | 1 | 460 | 3 | ND | 0 |
| | | | (8/31/99) | | (9/07/00) | | | |
| High Count: 787 | | | | | Total Counts in Database: 12 | | | |

Access and Site Viewing: Portions of roost visible from ground based access points within harbor, but boat may be required to see entire area.

Management Concerns: Fishing-related conflicts, contaminants, and intentional harm by humans. Pelicans have some negative impacts on private property at this site.

NRDA: Assessment of free-ranging oiled, but not recoverable pelicans

- Can get you there and increase search efficiency, but very important to:
 - Respond ASAP after spill in pelicany area
 - Use observers qualified to discern oiled versus natural plumage

Restoration Use Starting Point

- Provides some information on roosts
 - distribution abundance, ownership etc.
- Suggests types of management issues in area



Restoration Limitations

- Should not replace further data collection prior restoration effort
- Has limited value for prioritizing, planning, designing or implementing cost-effective and successful restoration projects

Other Atlas Values

- Species Conservation and Management
 - Clear identification of major roost sites
 - Starting point for development of management plans for key traditional night roosts
 - Establishes agency responsibility



Acknowledgements

- Randy Imai, OSPR
- Judd Muscat, OSPR
- Marion Boyd, OSPR
- Paul Kelly (former OSPR)
- Dan Anderson (UCD)
- CDFG Air Support
- USFWS Sacramento
- The many field assistants that have participated in surveys over the years

